

Getting Started

I. OBJECTIVES	1
II. INTRODUCTION	1
A. Files and Directories	1
B. The PC	2
C. Project Vincent	3
III. APPLICATIONS	3
A. ...on the PC: Scientific Writing with Microsoft Word 6.0.....	3
B. ...on Vincent: Using E-mail and Newsgroups	3
C. ...Moving files between the PC and Vincent	4
IV. EXERCISES.....	5
A. File manipulation on the PC using Windows.....	5
B. File Manipulation on the PC using DOS	4
C. Up-loading and Down-loading Files.....	6
D. Scientific Writing on the PC	5
E. File Manipulation on Vincent using UNIX.....	5
F. Reading the Physics 232 Newsgroup.....	7
G. Sending E-mail	7
V. APPENDIX: DOS AND UNIX SUMMARY	8

I. Objectives

To become familiar with hardware and software of personal computers (PCs) and Project Vincent: manipulating files, using features of MS Word, sending e-mail, viewing newsgroups, and up-loading and down-loading files.

II. PC hardware

Have you ever seen the inside of a computer? A theorist probably does not need to know too much about the guts of a computer (except to add or replace interface cards), but an experimentalist really needs to know how a computer works (not just how to use it).

Therefore, we will start this course by taking off the cover, taking out all the parts, explaining their function, and put everything back together. Hopefully, everything will work just as fine afterwards. If not, we could be in for a long afternoon.

Here are some of the terms you should know after this exercise is complete:

CPU, ROM and RAM. ISA, VLB, and PCI bus. Interface cards: video, serial, parallel port, IDE hard drive, SCSI, network, mouse, keyboard. Monitor (VGA, SVGA).

III. Introduction

A. Files and Directories

On any computer, information and data are organized into **files** and **directories**. We will look at the general ways of organizing files and directories on both the PC and Vincent. This will be an overview, and more specific information may be found in the user reference memos available in Durham Center, room 195.

All information that one would like to store on a computer must be placed in a location called a **file**. When many files exist it is best to organize the files by placing related files into a common **directory**. This organization is often indicated by drawing a tree diagram such as Figure 1.

The shaded boxes in Figure 1 indicate directories, and the clear boxes indicate files. In order to tell the computer the exact location of a file nested in several **subdirectories**, directories within directories, one must specify the **path** to the file. This consists of the names of all the directories through which one must travel to get to the file listed in order from the highest directory to the lowest.

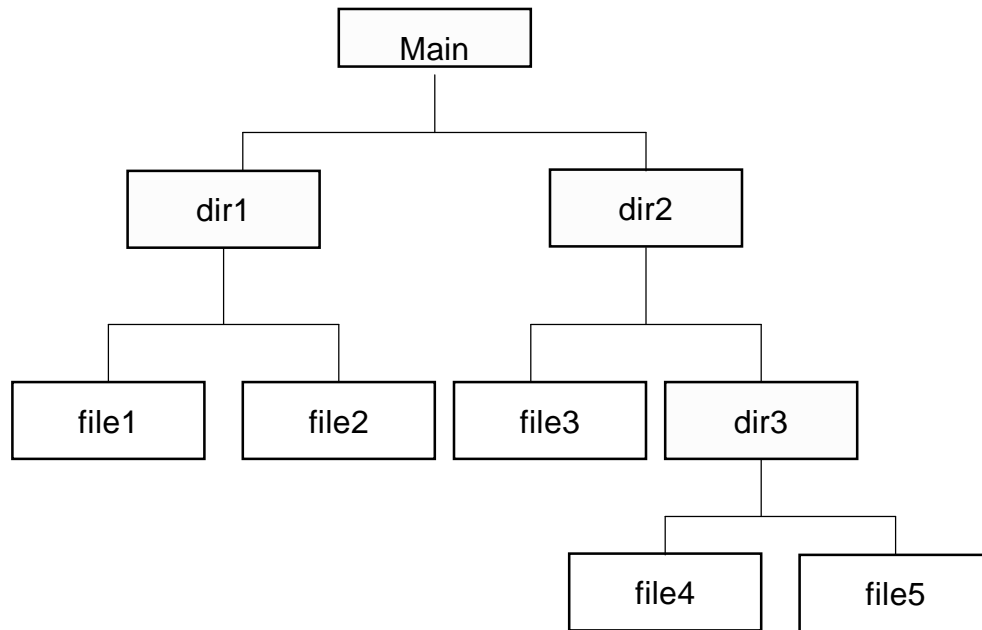


Figure 1

The table below summarizes the notations used on both the PC and Vincent for specifying the location of two files in Figure 1.

Path to...	...is written on a PC as	...is written on Vincent as
file1	c:\dir1\file1	/home/dir1/file1
file4	c:\dir2\dir3\file4	/home/dir2/dir3/file4

Note two differences: (1) the name of the main directory is called **C:** for the PC (this specifies the **hard disk** inside the PC) and is called **/home** on Vincent; (2) the slash that separates the directory names is **** on the PC and **/** on Vincent.

B. The PC

The PC offers several environments in which to manipulate files: The most common ones (until recently) are **Microsoft Windows** and the **disk operating system (DOS)**. In MS-Windows, file management is done with the **File Manager**, which may be activated by double clicking the File Manager icon. This is perhaps the easiest method for performing file operations, but not always the fastest way.

You may also perform file operations with DOS. To do so you must exit Windows. Then you must issue the file command appropriate for the file operation you want to perform. These commands are listed in the Appendix.

C. Project Vincent

Project Vincent is the name given to the network of workstations at Iowa State University. In Physics 232 we will either use the Vincent workstations available in Durham Center or will connect to Vincent through the PCs using **Telnet** (this will be described later).

To manipulate files on Vincent you will need to know a few commands in **UNIX**. Some of these commands are the same as the DOS commands on the PC. See the Appendix for a list of essential UNIX commands.

IV. Applications ...

A. ...on the PC: Scientific Writing with Microsoft Word 6.0

In Physics 232 we will discuss how to use MS Word to:

- Create and edit equations
- Automatically number equations, tables, and figures

B. ...on Vincent: Using E-mail and Newsgroups

1. Connecting to Vincent from the PC

We will often need to connect to Vincent from the PCs using Telnet. To do this, go into Windows and open the application Telnet by double-clicking its icon.

In the applicationdo the following...	...in order to...
MS Windows	double-click the Telnet icon	activate Telnet
Telnet	select open from the File menu or select connect menu	
	type the name of the workstation to which you want to go: isum1, isum2, isua1, isua2	tell Telnet where you want to go
	follow the login procedures you normally would	access your Vincent account

2. E-mail

To create and send an e-mail message, do the following:

At the prompt...	...type...	...in order to...
vincent>	comp	...begin message
To:	<i>e-mail address</i>	...indicate where message should go
	<i>message text</i>	
	<control>-x <control>-c	...exit message
	y	...save message
What now?	send	...send message

3. Newsgroups

To read a newsgroup, do the following:

At the prompt...	...type...	...in order to...
vincent>	rn <i>newsgroup</i>	...begin reading news

If this is your first time, you may have to type N (upper case) to ignore other newsgroups.

C. ...Moving files between the PC and Vincent

In research it is often necessary to move files between computers, for example between a PC and Vincent. Moving a file from the PC to Vincent is called **up-loading** the file, and moving the file from Vincent to the PC is called **down-loading** the file.

To move files between the PC and Vincent we will start in MS Windows. Find the icon for an application called **ftp** and double-click the icon. Now follow the directions below:

At the prompt...	...type...	...in order to...
ftp>	open isum1	begin logon procedure to workstation isum1
username:	<i>your username</i>	access your Vincent account
password:	<i>your password</i>	access your Vincent account
ftp>	get <i>filename</i>	to down-load a file from Vincent to the PC
ftp>	put <i>filename</i>	to up-load a file from the PC to Vincent

V. Exercises

A. File manipulation on the PC using Windows

Objective:	to gain experience in using MS File Manager to manipulate files
Where to begin:	start in MS Windows (if you are not already in Windows, type win at the DOS prompt)
What to do:	use MS Word and MS File Manager to perform the operations below
What to turn in to your instructor:	nothing: for your experience only
What to put in log book:	problems, solutions, new commands, etc.

- (1) Enter the File Manager by double-clicking its icon, and create a directory on the C drive called phys232. Then exit the File Manager.
- (2) Enter MS Word by double-clicking its icon. Create several text files (put anything you want inside) to play around with and save them to the directory you created. Then exit Word.
- (3) Enter the File Manager and play around. For example, you might create a few subdirectories and move the files into them. Explore the commands on the menu bar.

B. File Manipulation on the PC using DOS

Objective:	to gain experience using DOS to manipulate files
Where to begin:	start at the DOS prompt (exit Windows by clicking the button in the upper left corner of the screen)
What to do:	use the DOS commands in the Appendix to help you manipulate files
What to turn in to your instructor:	nothing: for your experience only
What to put in log book:	problems, solutions, new commands, etc.

- (1) Enter DOS. Place yourself in directory phys232 and list the contents. Now play around with the DOS commands (see Appendix). Try all of the commands at least once to gain familiarity with them.

C. Up-loading and Down-loading Files

Objective:	to gain experience up-loading and down-loading files
Where to begin:	start in Windows
What to do:	move the files you created in the previous exercise to your Vincent account
What to turn in to your instructor:	nothing
What to put in log book:	problems, solutions, new commands, etc.

- (1) Since you have text files already, play around with **ftp** by up-loading the files to your Vincent account.

D. Scientific Writing on the PC

Objective:	gain experience with the Equation Editor of Word
Where to begin:	start in Windows
What to do:	type the scientific text in the Appendix
What to turn in to your instructor:	one copy of your work
What to put in log book:	problems, solutions, new commands, etc.

- (1) Type up the scientific text at the end of this document.

E. File Manipulation on Vincent using UNIX

Objective:	to gain experience using UNIX to manipulate files.
Where to begin:	on Vincent (to access Vincent from the PC, see section III B (1)).
What to do:	use the commands of the Appendix to perform the instructions below.
What to turn in to your instructor:	nothing: for your experience only.
What to put in log book:	problems, solutions, new commands, etc.

- (1) Access your Vincent account. Using the commands of the Appendix create a directory called phys232. Place yourself in this directory.
- (2) Use the editor **emacs** to create several text files (again, put anything you want inside) within this new directory. You may find the information in Note[1] below the Appendix helpful.
- (3) Play with the UNIX commands in the Appendix, trying each command at least once. For example, you might create a few subdirectories and move the files into them.

F. Reading the Physics 232 Newsgroup

Objective:	to gain experience reading newsgroups
Where to begin:	on Vincent (to access Vincent from the PC, see section III B (1)).
What to do:	read messages on the newsgroup
What to turn in to your instructor:	nothing: for your experience only
What to put in log book:	problems, solutions, new commands, etc.

- (1) Read the message on the Physics 232 newsgroup. **Please check this newsgroup before class each Friday for postings.** Whenever the meeting room changes, we will post this information in the Physics 232 newsgroup.

G. Sending E-mail

Objective:	to gain experience using e-mail by sending us a questionnaire
Where to begin:	on Vincent (to access Vincent from the PC, see section III B (1)).
What to do:	send an e-mail message to your instructor Anand Shastri: shastri@iastate.edu
What to turn in to your instructor:	nothing: your work will be sent by e-mail
What to put in log book:	problems, solutions, new commands

- (1) Listed below are several pieces of information we would like to know about you. Please send an e-mail message to Anand Shastri (with a carbon copy to Stefan Zollner) giving us the following information about yourself:

- (1) Your name
- (2) Your Project Vincent username
- (3) Please send us some written comments about your experience (more than just checking the boxes in the survey).
- (4) What are your goals for this course?
- (5) What are your most important concerns regarding this course?
- (6) What would you like to see in the two open lab units?

VI. Appendix: DOS and UNIX Summary

	Command		What it does
	DOS (for PC)	UNIX (for Vincent)	
Help Commands	help <i>command</i>	man <i>command</i>	gives help on the command in question
File Commands	edit <i>file</i>	emacs <i>file</i> (see note [1])	allows one to create and edit <i>file</i>
	del <i>file</i>	rm <i>file</i>	deletes <i>file</i>
	type <i>file</i>	more <i>file</i>	displays contents of file
	copy <i>file1 file2</i>	cp <i>file1 file2</i>	copies <i>file1</i> to <i>file2</i>
	print <i>file</i>	lpr -Ppy53 <i>file</i>	prints out <i>file</i> on printer (note that printer py53 is located in room 53)
Directory Commands	mkdir <i>directory</i>	mkdir <i>directory</i>	makes <i>directory</i>
	rmdir <i>directory</i>	rmdir <i>directory</i>	removes <i>directory</i>
	cd <i>directory</i>	cd <i>directory</i>	moves you into <i>directory</i>
	dir	ls	displays contents of current directory
		pwd	displays your present working directory pathname

Note [1]: In emacs one needs to know a few commands to edit files. The most important are
 <control>-d (for deleting individual characters)
 <control>-k (for deleting and entire line)
 <control>-x-<control>-c (for exiting document when finished)
 (the notation <control>-x means hold the control key and x key down simultaneously).

VII. Appendix: Scientific Text to be Typed

The normalized spectral density becomes:

$$j(\omega) = \int_{-\infty}^{+\infty} g(t) \exp(-\omega t) dt = \frac{1}{N} \sum_q \frac{2Dq^2}{(Dq^2)^2 + \omega^2} = \tau_D \ln \left(\frac{\tau_D^{-2} + \omega^2}{\omega^2} \right), \quad (5.15)$$

where we have integrated over q in two dimensions $q_m = \frac{\sqrt{8\pi}}{\sqrt[4]{3}} (1/l_e)$ (in a triangular lattice) and set $\tau_D = \frac{8\pi}{\sqrt{3}} (D/l_e^2)^{-1}$. Finally, from Eqs. (5.13) and (5.15) one has

$$R_1 = 4\gamma_N^2 \langle \Delta B^2 \rangle \frac{d^2 \langle u^2 \rangle_{\text{irr}}}{l_e^2 \xi^2} \left(\frac{T}{T_{\text{irr}}} \right) \tau_D \ln \left(\frac{\tau_D^{-2} + \omega_L^2}{\omega_L^2} \right), \quad (5.16)$$